LaserGas™ III Single Path Oxygen Analyzer

Control Analytics, Inc. introduces a new NEO Monitors, designed for service in hazardous areas. Based on our third generation LaserGas electronics, the entire instrument is built into a compact, flameproof enclosure for easy fit into zone 1 and division 1 applications. The LaserGas III O₂ consists of a transmitter and receiver unit that are mounted diametrically opposite each other on stacks, ducts or reactors. The laser light will cross the process gas and concentration changes are detected in-situ and in real-time.

The LaserGas III O₂ sets a new standard for fast and reliable TDLS analysis. The laser scans the absorption line in milliseconds. This enables overall instrument response times of 100 msec, immediately uncovering critical oxygen concentration changes. The LaserGas III O₂ is our most reliable gas sensor with all electronics designed according to IEC 61508, SIL 2 (safety integrity level). Based on the fully digital Gen. 3 LaserGas electronics, the instrument is extremely efficient and powerful.

NEO Monitors LaserGas is using Tuneable Diode Laser Spectroscopy (TDLS), a non-contact optical measurement method employing solid-state laser sources. The sensor remains unaffected by contaminants and corrosives and does not require regular maintenance. The highly selective laser source scans a single gas absorption line specific to the target gas, eliminating cross interference from other gases.

The LaserGas III O₂ is the solution for reliable and fast measurement of oxygen in safety critical applications or in combustion control. Some of the focused applications include the chemical industry for the interisation control of reactors, Vinyl Chloride or PVC, Acrylic acid recovery, carbon, black, etc., the petrochemical industry including FCC units, tail gas treatment, flare gas monitoring, vent headers of incinerators, process headers and more, and the steel industry for coke oven gas, converter coal gas, and reheating furnaces.

Features Include:

- Gen. 3 compact LaserGas electronics
- For operation in zone 1 class 1 div 1 areas
- Sub second response times
- Low power < 10 Watt
- Suitable for use in SIL 2 systems
- Stable calibration and no zero drift
- No gas sampling with in-situ measurement

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## LaserGas™ III Single Path Oxygen Analyzer

### Technical Data:

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<th>Specifications</th>
<th>Details</th>
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<tr>
<td>Detection limit (O₂)*</td>
<td>100 ppm **</td>
</tr>
<tr>
<td>Max. process gas temperature</td>
<td>1500 °C</td>
</tr>
<tr>
<td>Max. process gas pressure</td>
<td>10 bar abs</td>
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<tr>
<td>Optical path length</td>
<td>Typically 0.5 – 20 m</td>
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<tr>
<td>Response time</td>
<td>100 msec</td>
</tr>
<tr>
<td>Repeatability</td>
<td>+/- Detection limit or +/- 1% of reading, whichever is greater</td>
</tr>
<tr>
<td>Linearity</td>
<td>&lt; 1%</td>
</tr>
</tbody>
</table>

### Environmental conditions

| Operating temperature  | -20 °C to +55 °C (extended rating -40 °C and/or +65 °C on request) |
| Storage temperature    | -40 °C to + 70 °C                                                |
| Ingress protection     | IP65                                                          |

### Inputs / Outputs

| Analogue output (3)    | 4 – 20 mA current loop, source or sink                      |
| Digital output         | 10/100 Base T Ethernet (Modbus TCP), USB, RS-485            |
| Relay output (2)       | High gas-, and fault relays (normally closed circuit relays) |
| Analogue input         | 4 – 20 mA process temperature and pressure reading         |

### Ratings

| Power supply           | 24 VDC, range 18 – 32 VDC                                 |
| Power consumption      | Max. 10 W                                                 |
| 4 – 20 mA output       | 500 Ohm max. load impedance, not isolated                |
| Relay output           | 1 A at 30 V DC/AC                                         |

### Installation and Operation

| Flange dimension       | DN50/PN10 or ANSI 2 1/2(150lbs (other dimensions on request) |
| Alignment tolerances   | Flanges parallel within 1.5°                              |
| Purging of windows     | Dry and oil-free pressurised air or gas, or by fan        |
| Purge flow             | 10 – 50 l/min per flange (application dependent)          |
| Calibration            | Check recommended every 12 months                         |

### Security

| Laser class            | Class 1 according to IEC 60825-1, eye safe               |
| CE                     | Certified                                                 |
| EMC                    | Conformant with directive 2004/108/EC                    |

### Approvals

| ATEX rating TU/RU      | II 2 G Ex d I op is III T4, II 2 D Ex tA21 IP65 T88 °C |
| ATEX rating connection box | II 2 G D Ex e II T6 tA21 IP66 T80 °C                   |
| CSA                    | Class 1 Div. 1, Groups B, C and D (pending)              |
| Functional safety      | Compliant with SIL 2 requirements according to IEC 61508 |

### Dimension and weight

| Transmitter and receiver unit (TU/RU) | 215 mm (length, add 50 mm for purge unit) x 125 mm (diameter), 3.5 kg each |
| Window unit (optional)               | 75 mm (length) x 90 mm (diameter), 1.1 kg                  |
| TU/RU connection box                 | 260 x 160 x 90 mm, 2.5 kg                                  |

* Other gases on request

** Detection limits are specified as the 95% confidence interval for 1 m optical path and gas temperature / pressure = 25 °C / 1 bar abs.

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For more information or a no-obligation quote, contact us:

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